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The book should doubtless be appraised from a less exacting viewpoint. As a critical compilation of income statistics it is unquestionably an eminently valuable piece of work.

G. P. WATKINS.

The Elements of Statistical Method. By WILLFORD I. KING.
(New York: The Macmillan Company. 1912. Pp. xvi,
250. \$1.50.)

The Elements of Statistical Method is not a comprehensive study; it does not present new material or methods; it is not a handbook of the sources of statistical data; it does not treat fully of the numerous practical problems connected with the collection, presentation, analysis, and judgment of definite classes of social and economic statistics, such as population, vital, price, trade, wage, and financial statistics. It does present in convenient shape statistical history and methods that can be found *in extenso* in the texts of such writers as Bowley, Meitzen and Yule. The author states in the preface that the book is meant "to furnish a simple text in statistical method for the benefit of those . . . who desire a general knowledge of the more elementary processes involved in the scientific study, analysis and use of large masses of numerical data. . . . No pretense whatever has been made, in this work, of presenting any but the most simple of the mathematical theorems upon which statistical method is based."

The questions to be considered in reviewing the book, then, are these: Is the subject matter well selected? Are the statements accurate and supported by adequate citation of authorities? Is the method of treatment good? Are the explanations clear?

A number of subjects that should be treated even in an elementary, methodological work on social and economic statistics are neither discussed in the text nor referred to in the index. For instance, there is no reference to "wages," "budgets," or "census." The extremely important subject of average indices of prices, wages, etc., is treated in three and one half pages, while skewness is given eight pages, and the ratio of variation is given sixteen pages.

The definition of correlation given is not well stated: "Correlation means that between two series or groups of data there exists some causal connection (p. 197)." In regard to index numbers of prices, Mr. King states that "if one wishes to study the effect of a changing volume of gold or of money on prices

. . . a change in the price of one article is just as good a criterion as a change in price of any other. The quantity or importance of the commodity does not enter into the question at all (p. 183).” Yet in discussing this very point Professor Irving Fisher found it necessary to examine in detail forty-four different varieties of averages of index numbers of prices¹ as a result of his conclusion that all prices must be included and weighted “in proportion to the amounts exchanged for the circulating medium.”² The author uses the unfamiliar terms “ogive” and “historigram” without citing precedent, and with the assumption that they are in common usage. He uses the term “histogram” erroneously to cover frequency-curves (p. 116). Professor Pearson suggested that term to denote the series of rectangles with widths corresponding to the class-intervals and heights corresponding to the class-frequencies of a frequency table. Mr. King gives as an “ideal measure of skewness” (p. 163):

$$\frac{\text{arithmetic average—mode}}{\text{the average deviation from the mode}}$$

On the other hand, Yule states in his *Theory of Statistics* (p. 150) that “there is, however, only one generally recognized measure of skewness” which is:

$$\frac{\text{arithmetic average—mode}}{\text{standard deviation}}$$

The author frequently omits to cite the authorities for his statements.

The plan of treatment is good. Methods are emphasized and data are used merely as illustrations. However, the mathematics is not always elegant. For instance, three or four lines each would be sufficient to demonstrate two propositions which the author treats in a page and a half (pp. 133, 135).

The explanations are clear, though brief, and not always entirely accurate. The author has done well to discuss such subjects as frequency curves, dispersion and correlation. Despite its shortcomings, *The Elements of Statistical Method* is the best text available in the elements of statistics for American classroom use. It should, however, be widely supplemented when so used.

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¹ *The Purchasing Power of Money*, p. 400 et seq.

² *Yale Review*, May, 1902, p. 111.